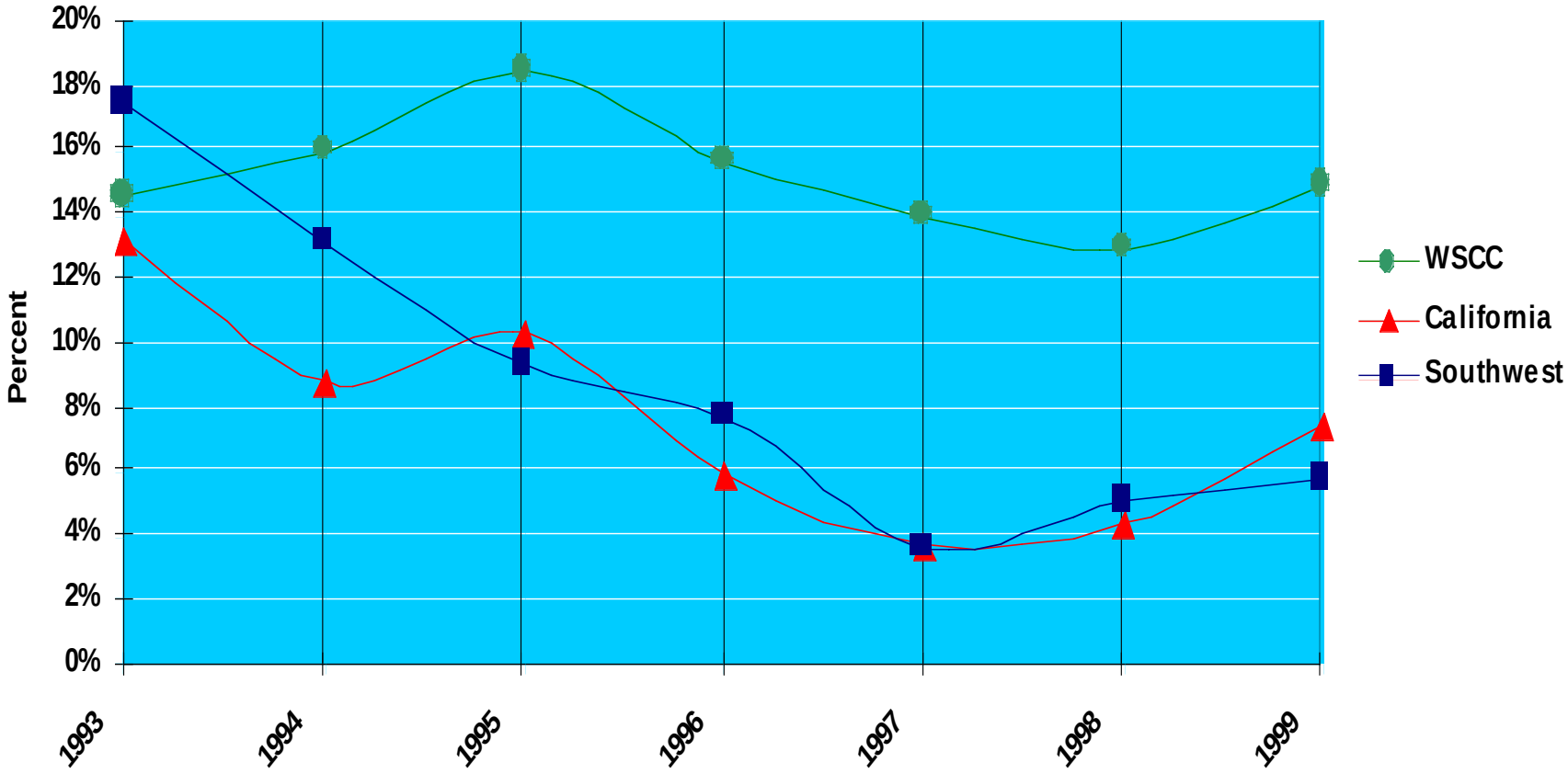
Overview

- Review the reliability of electricity supply in California since deregulation.
- What was the outlook for the summer of 2001?
- Why no rotating blackouts this summer?
- What about next summer and beyond?
- CEC programs available to help local governments save energy

Measures of Reliability

- **Operating Reserves 7% Above Demand**
  - **Required for reliable service**
- **Operating Reserves Below 7% - Stage 1**
  - **Customers voluntarily curtail usage**
- **Operating Reserves Below 5% - Stage 2**
  - **Curtail interruptible customers (voluntary load curtailments)**
- **Operating Reserves Below 1.5% - Stage 3**
  - **Involuntary load curtailments initiated (Rotating blackouts)**

Reserve Margins in the West
Peak Summer Demand
1993 - 1999



Reliability Since Deregulation

- ISO begins operations Spring 1998.
- Summer of 1998 (hottest in last 40 years)
  - Operating reserve drop below 5% 5 times.
  - No Stage III alerts
- Summer of 1999 one of the coolest on record
  - Operating reserves drop below 7% 3 times
  - No Stage II alerts
  - ISO peak demand exceeds previous summer

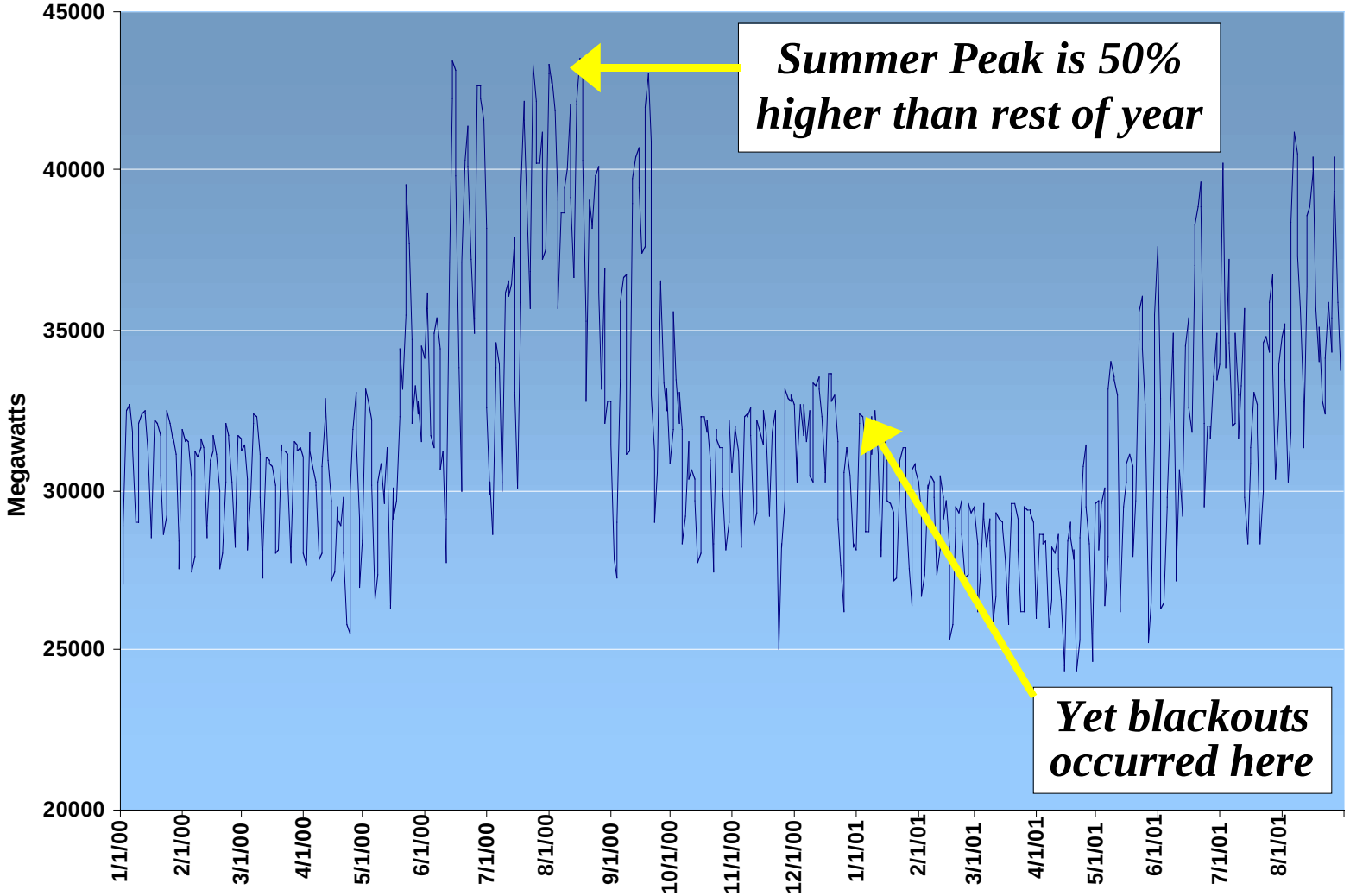
Summer 2000

- **Summer of 2000 unseasonably warm spring - average summer**
  - **Stage II declared on May 22nd due to high temps in Bay area. 6,000 MW of generation off-line.**
  - **June 14th temperatures in Bay Area reach highest recorded level in 125 years**
    - **Two large power plants down in Bay Area**
    - **PG&E institutes rolling blackouts in Bay Area for the 1st time**
    - **Rest of ISO only in Stage I alert**
- **16 Stage II alerts called during the summer - no stage III**

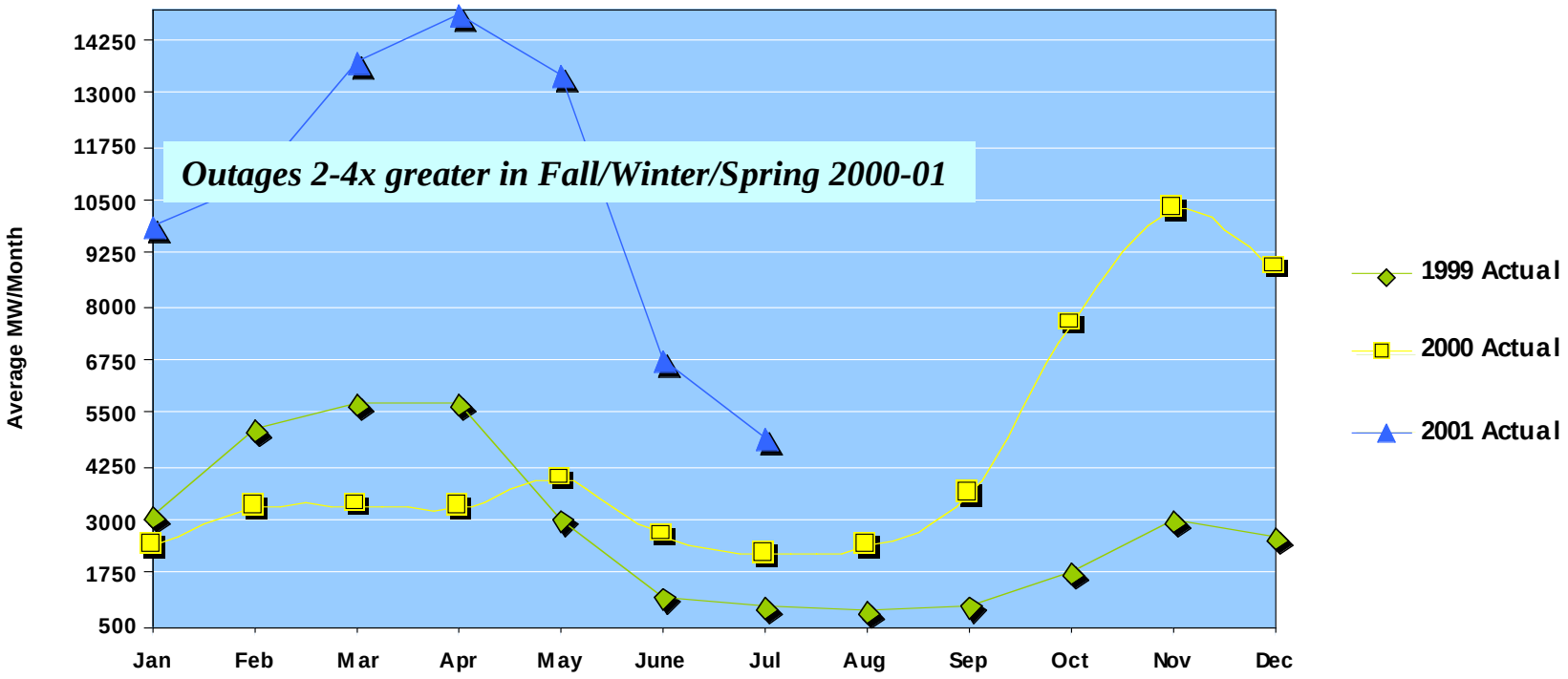
2000-2001
'The Winter of our Discontent'

- **December 7th first Stage III is declared**
  - **DWR drops 200 MW of pumping load to avert rotating blackouts**
- **20 consecutive days in Dec. of Stage I or II alerts**
- **State under Stage III alerts Jan 16th - Feb 16th**
- **Statewide rotating blackouts**
  - **3 days in January**
  - **2 days in March**
  - **2 days in May 2001**

ISO Daily Peak Loads
January 2000 - August 31, 2001



Historical Generation Outages Scheduled and Forced (Average MW/Month)



CEC February Outlook for the Summer of 2001

Temperature Probability	1-in-10
Peak Demand + 7% Operating Reserve	61,125
Firm In-State Generating Capacity	54,375
Firm Imports	4,841
Available Generation Capacity	59,216
Estimated Outages	3,050
Dependable Generation Capacity	56,166
Surplus / Deficit	-4,959

Bridging the Gap

- **Generation**
  - Increased output from existing plants
  - Accelerate construction of approved plants
  - Develop new peaking and renewable plants
- **Goal 5,067 MW**

- **Conservation**
  - State, Fed. & Local Govt. emergency load reduction
  - Augment existing utility conservation programs
  - New conservation programs
    - Demand responsive energy systems
    - Energy efficiency
  - Demand responsive load
  - Public outreach, 20/20
- **Goal 6,244 MW**

Results as of August 1st

- **Generation**
  - Increased output from existing plants

    505 MW
  - Accelerate construction of approved plants

    1,365 MW
  - Develop new peaking and renewable plants

    460 MW
- **Total 2,330 MW**

- **Conservation**
  - State, Fed. & Local Govt. emergency load reduction

    658 MW
  - Augment existing utility conservation programs

    124 MW
  - New conservation programs

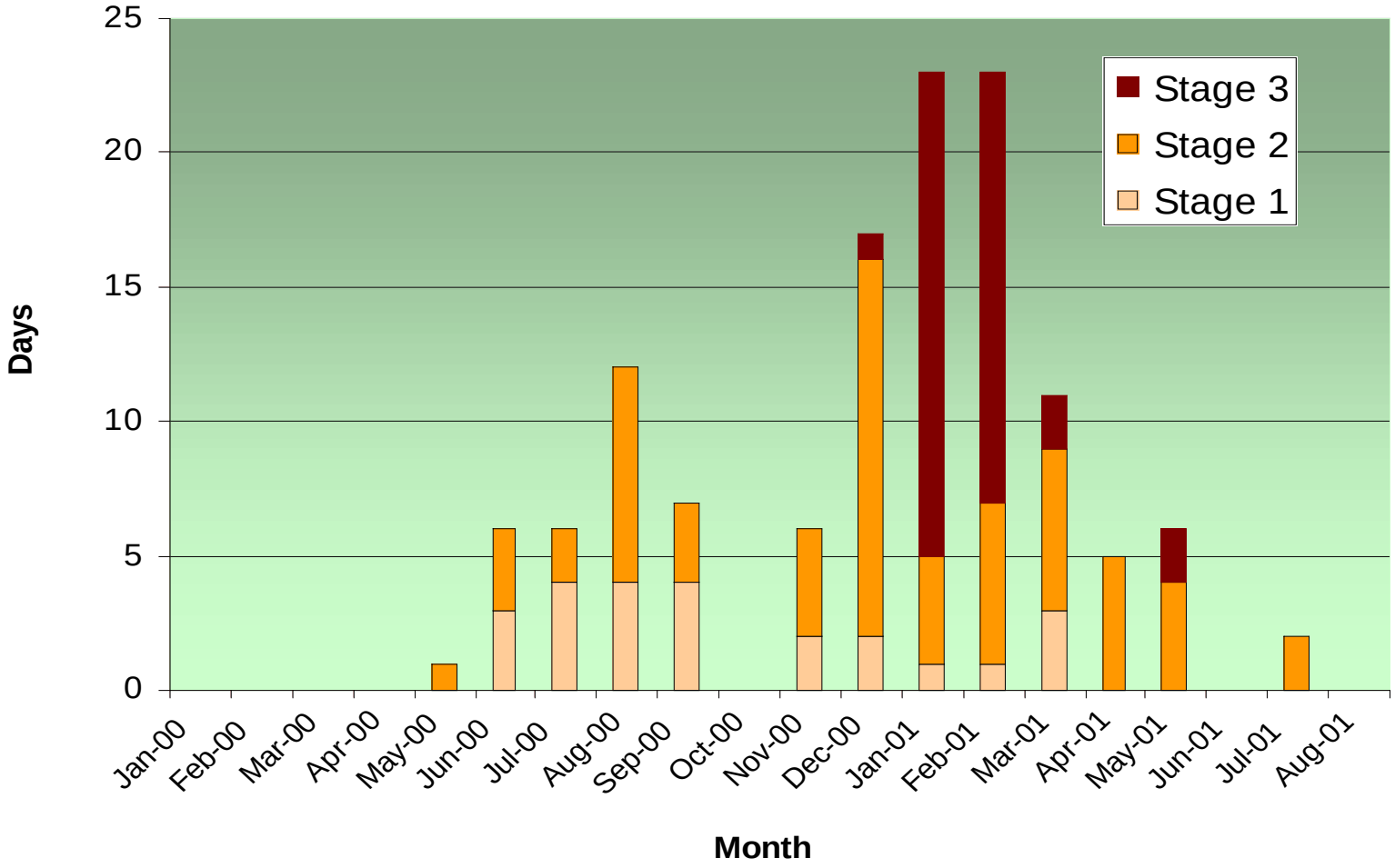
    501 MW
  - Demand responsive load

    1,795 MW
  - **Public outreach, 20/20**

    4,016 MW
- **Total 7,094 MW**

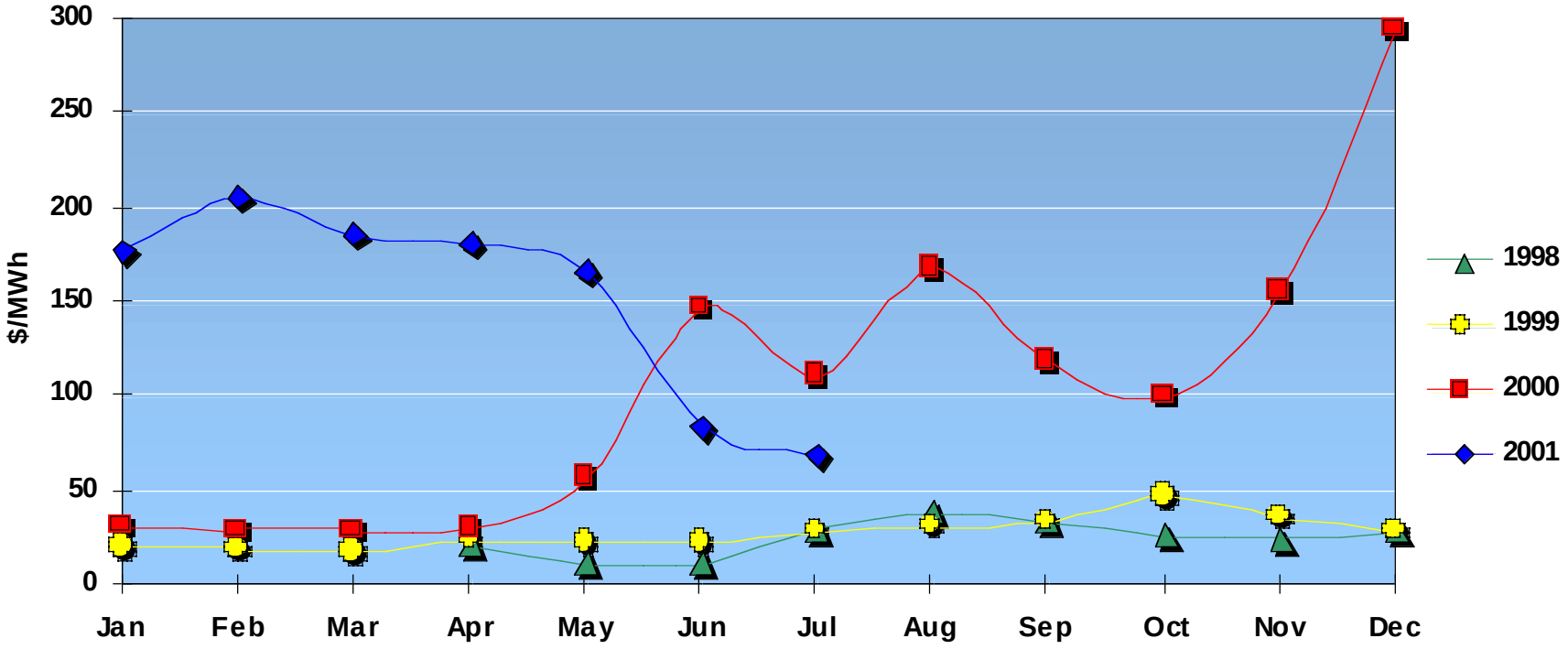
Emergencies

January 2000 to Date



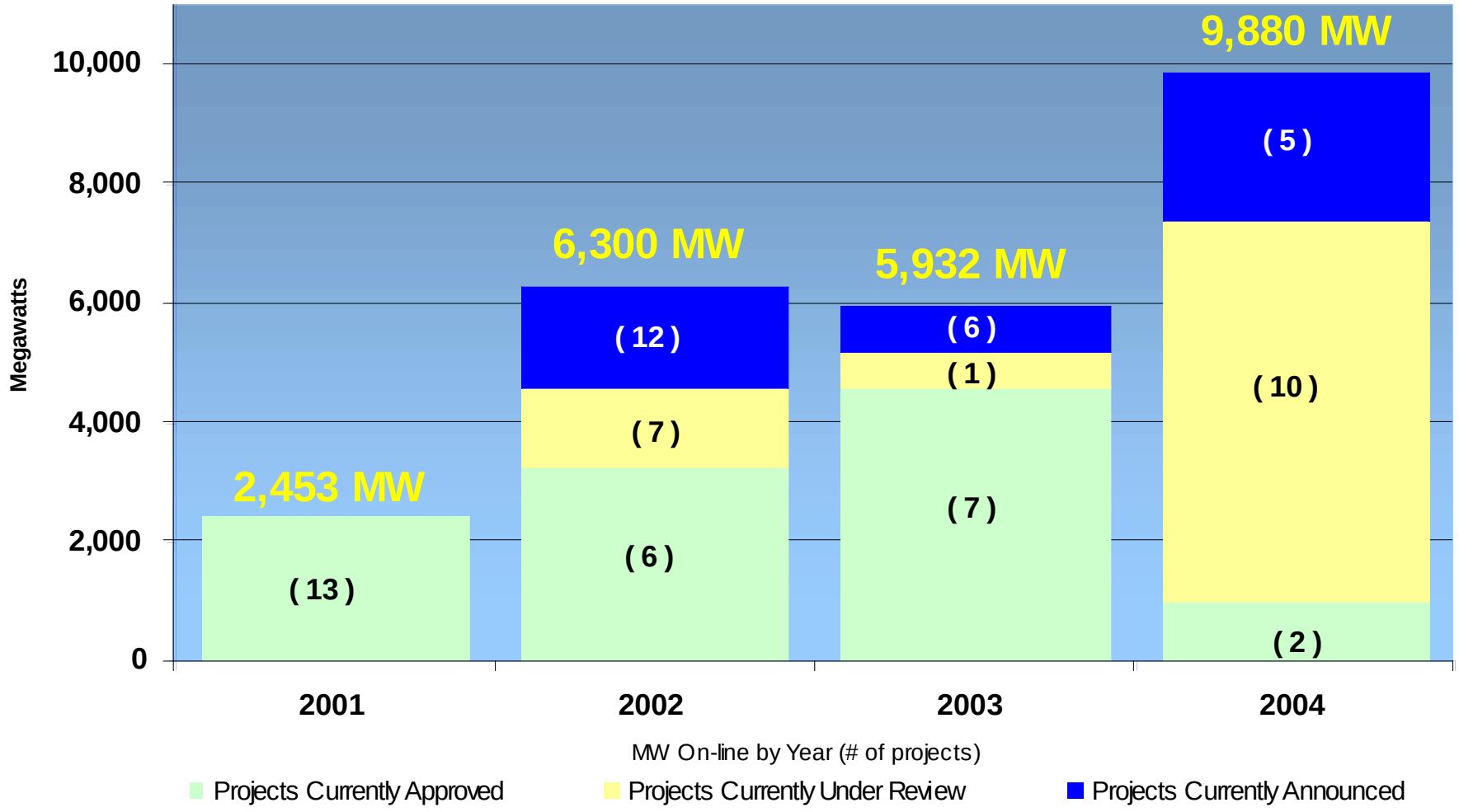
Electricity Costs

California Monthly Average Energy Costs
1998-2001
($/MWH)

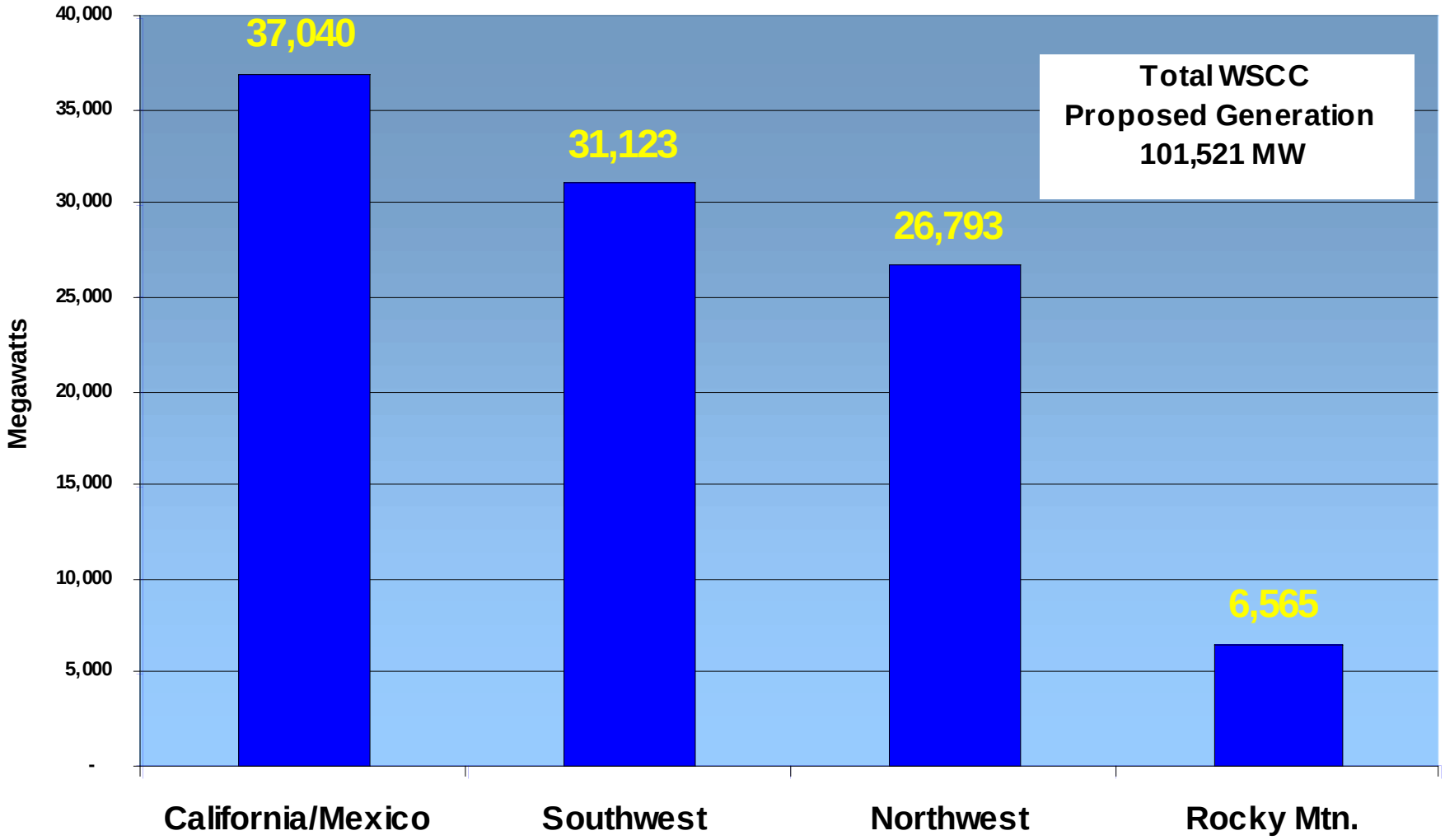


Sources: 1998-1999 PX Market Clearing Price
2000-2001 ISO Market Analysis Report, July 20, 2001

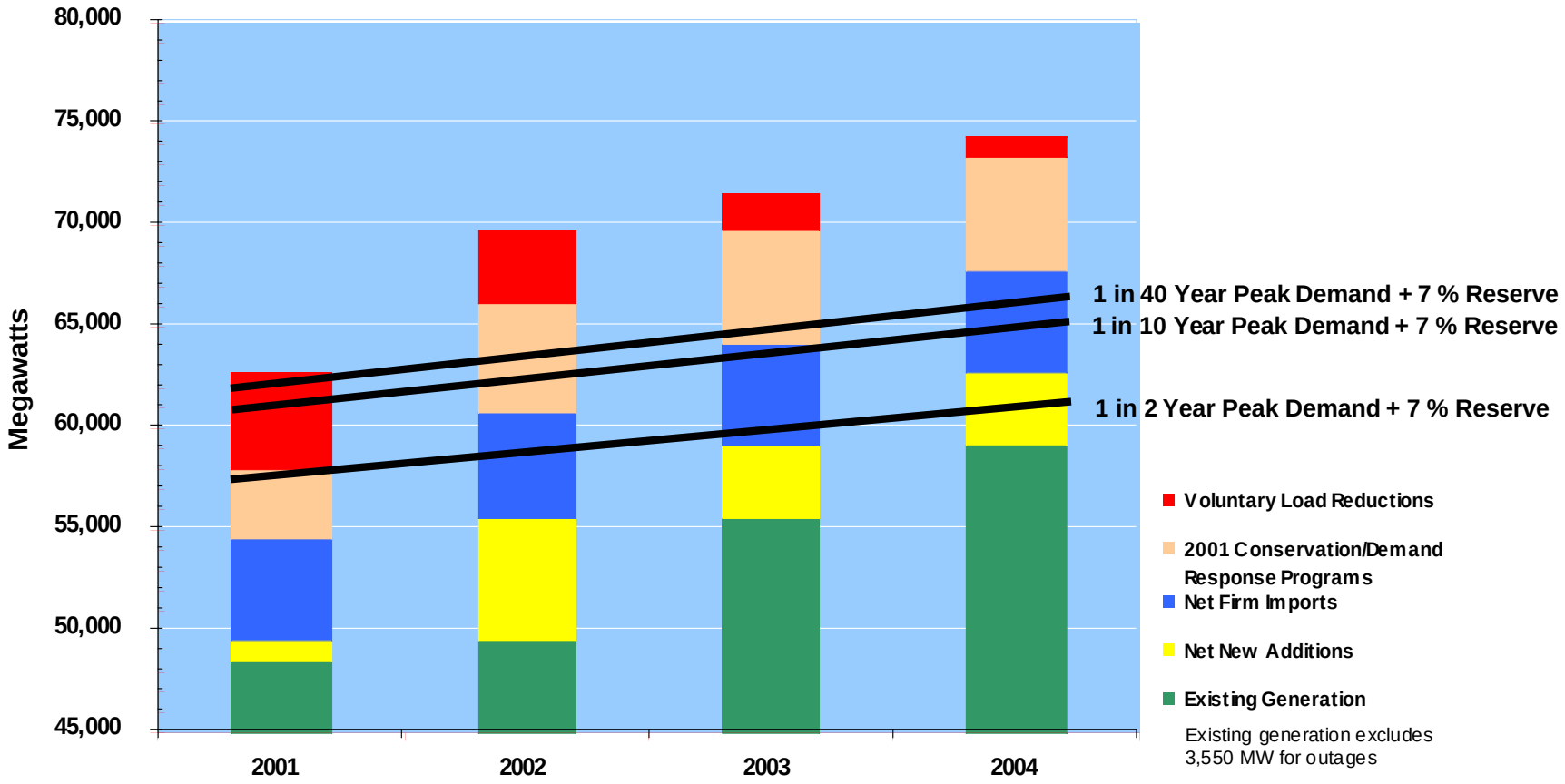
Maximum Powerplant Development Outlook In California



WSCC Proposed Generation By Region



California Statewide Load/Resource Balance
July 2001-2004
"Maximum Conservation/Demand Responsive Load - Cautious New Plant Development Scenario"



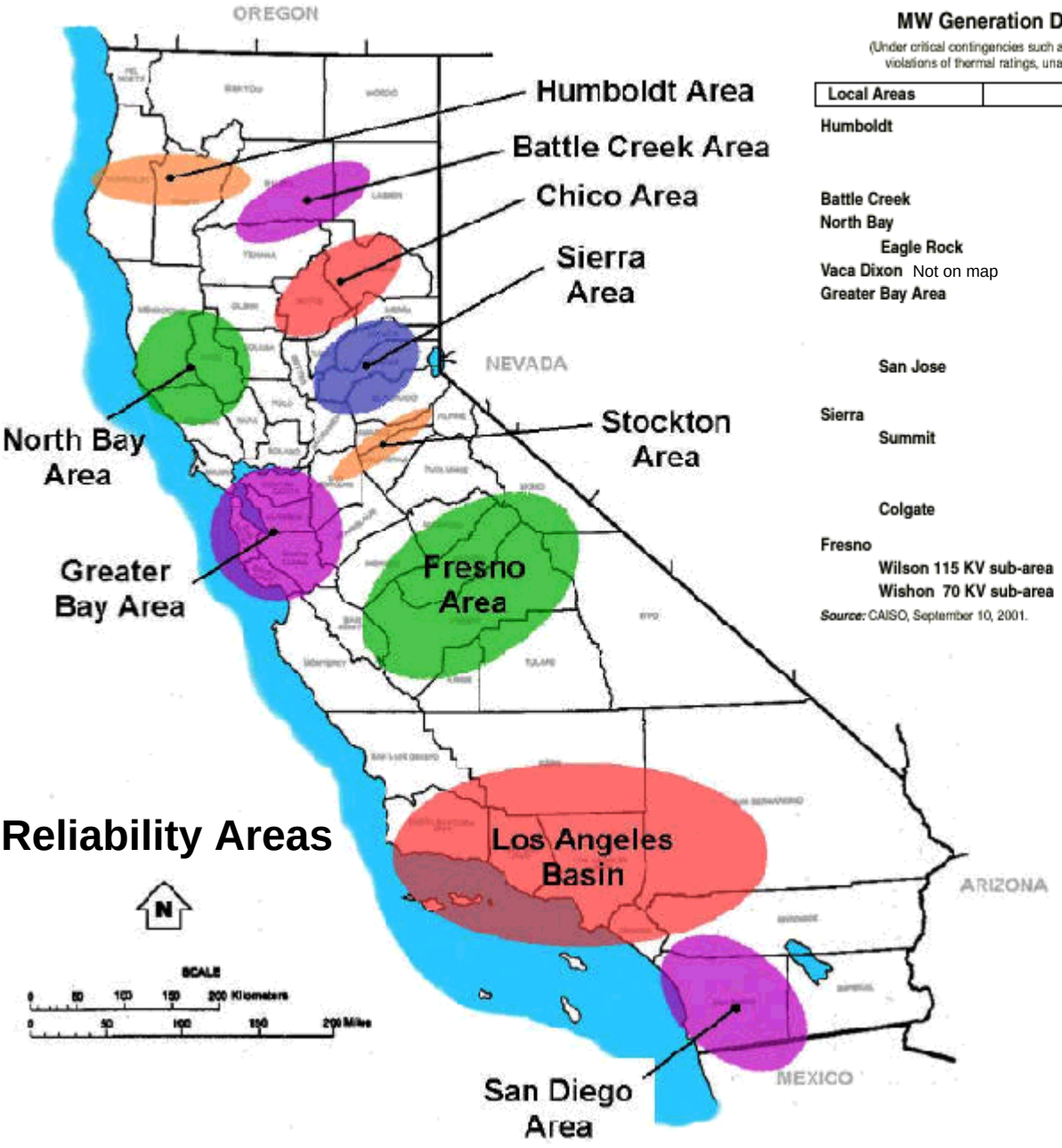
August 16, 2001

Inadequate Transmission Capacity

- Path 15 limits flows from south to north which contributes to power shortages in Northern California

- Transmission upgrades are vital to a reliable electric system, and to promoting greater competition among generators

ISO Local Reliability Areas



MW Generation Deficiencies in RMR Areas

(Under critical contingencies such as generator or line outages which result in severe violations of thermal ratings, unacceptably low voltage and/or reactive margins.)

Local Areas	2002	
Humboldt	88	The recommended solution is faster clearing times on the 60KV lines, not additional generation. PG&E is working on a project to fix this.
Battle Creek	10	
North Bay		
Eagle Rock	30	
Vaca Dixon Not on map	16	
Greater Bay Area		Potential for transmission system fix at the Tesla Substation could reduce RMR needs; equipment expected to be installed during 2002.
San Jose	350	This is the 115KV sub-area between Newark and Metcalf.
Sierra		
Summit	50	Transmission fixes would help this area more than generation additions. PG&E has an approved project for 2003 that would eliminate the most stringent contingency.
Colgate	10	
Fresno		
Wilson 115 KV sub-area	70	
Wishon 70 KV sub-area	10	

Source: CAISO, September 10, 2001.

Summary

- New generation, conservation programs, and voluntary load reductions turning around supply/demand imbalance
- Major Demand/Supply Uncertainties
  - Resolution of SCE & PG&E financial problems and the impact on demand from any additional rate increases
  - Generators perception of market conditions and whether to proceed with construction plans
- Adequate transmission capacity, both within California and between western states, more critical to long-term reliability, and promoting competition among generators
- Some “local” reliability areas within the State lack adequate generation

Energy Efficiency Opportunities

- **Energy Partnership Program**- **Provides technical assistance to identify cost-effective lighting, HVAC and other energy efficiency projects**
  - New and existing facilities
  - Buildings/processes
- **Energy Efficiency Financing** - **Provides low interest rate loans for efficiency and self generation projects (as low as 3% interest rate)**
  - Lighting, HVAC, controls
  - Pumps and motors
  - LED Traffic lights
  - Cogeneration systems

For information:

Tech Assistance: www.energy.ca.gov/efficiency/partnership/index.html

Financing: www.energy.ca.gov/efficiency/financing/index.html

Peak Load Reduction Grants

- **Cool Savings Program**- Provides incentives for the installation of highly reflective roofing materials
  - Up to $0.20/sq ft for installations 10/1/01-11/2002, if funds available
  - For info: **www.ConsumerEnergyCenter.org/coolroof**
- **Water/Wastewater Retrofits** - Provides incentives for water and wastewater agencies to retrofit diesel and natural gas generators to reduce Nox
  - About $4 million available
  - Maximum incentive of $300/kW
  - For info**:** **www.energy.ca.gov/peakload/wastewater.html**

Need More Information?

CEC staff at the League of Cities Conference

- **Energy Doctor**
- **Energy Commission Booth** (#333)

Visit the Energy Commission Web Site

- From home page go to - **Peak Load Reduction Program**
- Click on **Public Sector Programs**
- or **http://www.energy.ca.gov/efficiency/publicsectorjump.html**

Contact us at: 1-800-555-7794 or at 916-654-4008